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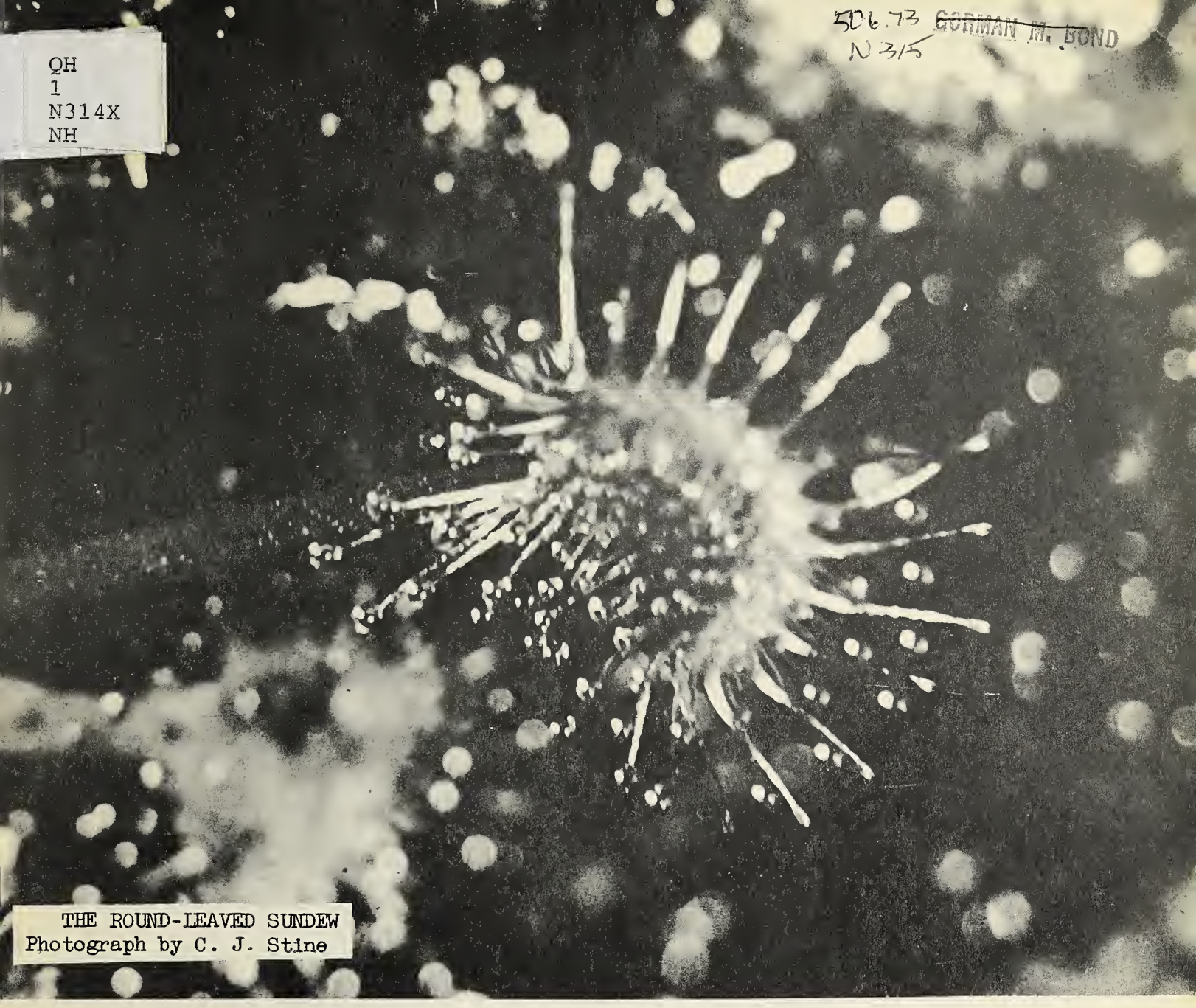

THE ROUND-LEAVED SUNDEW
Photograph by C. J. Stine

MARYLAND NATURALIST

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MUSEUM OF NATURAL HISTORY
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MARYLAND NATURALIST

The Predator

Lloyd, in his wonderful book "The Carnivorous Plants", lists about 450 species (exclusive of fungi) of "meat-eating" plants in the world. These belong to six families containing 15 genera. Three of these families, the *Sarraceniaceae*, *Lentibulariaceae* and *Droseraceae*, are represented in North America. One genus, *Dionea*, of the latter family, is monotypic, containing only the famed venus fly-trap, which is found in North Carolina and northern South Carolina. Another genus, *Drosera*, is represented moderately well in the eastern United States by at least six species. One of these, the round-leaved sundew, *Drosera rotundifolia*, is the species depicted on our cover. Only one other species, the spatula-leaved sundew, *Drosera intermedia*, is indigenous to Maryland. The thread-leaved sundew, *Drosera filiformis*, has been introduced in several localities.

The connotation of the name sundew is interesting. It refers to the sticky exudate of the leaf glands which shines like dew and persists in sunshine.

Almost always sundews grow where the soil is poor in nutrients. They are usually associated with sphagnum moss in bogs and swamps, but not always, for our cover shot was taken on the somewhat precipitous face of Muddy Creek Falls.

The mechanism utilized by sundews to capture prey has been classified as an active fly-paper trap. The leaves of the sundews are considerably modified to assist in the capture and digestion of insects. Drops of mucilage are secreted by glands situated at the ends of stalked appendages of the leaves known as tentacles. These are readily visible in the photograph. The prey is attracted by the glistening secretion, and upon alighting becomes stuck. Other tentacles in the immediate vicinity rapidly bend over the struggling insect, further entangling it. It has been conclusively shown, by taking measurements before and after an insect has been ensnared, that the tentacles are not actually motile but grow three times. In short order, proteolytic enzymes and bacterial action begin to decompose the insect until it is fit for utilization, thus providing protein, vitamins and certain salts for the plant.

When faced with such a startling phenomenon, I certainly must concur most heartily with Thomas Barbour that,"...the motive force of evolution is beyond our ken."

C.J.S.

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1957

NOTES ON THE TAXONOMY OF MARYLAND BIRDS

Part I - Non-Passeres

by Gorman M. Bond [1]

The geographical position of Maryland is such that it lies about midway between the "northern" and "southern" states of the Eastern Seaboard. While admittedly the breeding ranges of birds are not usually confined to man-made political boundaries, it is still a fact that some species of Maryland birds reflect definite northern or southern affinities.

This also means that on an intra-specific level, varying degrees of intergradation between the northern and southern races of widespread polytypic species occurs quite frequently within the state.

Where the band of intergradation is narrow (more ideally illustrated in some of the Passeres) racial displacement (on the Eastern Shore, at least) can usually be correlated with the boundary between the Wicomico and Talbot formations. In fact, Shreve (in *Plant Life of Maryland*, Johns Hopkins Press, 1910) has shown that the dominant vegetation of the Talbot is related to that farther south while that of the Wicomico terrace is related to the vegetation of the Piedmont Plateau.

The purpose of this paper, then, is to (1) more clearly define the geographical limits of these races as they occur in Maryland and (2) indicate certain changes, additions and corrections, insofar as they concern the systematics of Maryland birds, which have occurred since the publication of Hampe and Kolb's *Preliminary Check List of Maryland Birds* (Baltimore, Nat. Hist. Soc. Md., 1947).

For the use of comparative material utilized in this study, I am indebted to the authorities of the U. S. National Museum and the U. S. Fish & Wildlife Service, Washington, D. C., and to Mr. Irving E. Hampe, Curator of the Society's Department of Ornithology and Mammalogy. (Natural History Society specimens are marked "NHSM" in the text).

For valuable assistance in the field, I would like to thank Messrs. Robert E. Stewart, Brooke Meanley and Bernard Feinstein.

Measurements and other sub-specific criteria have been taken from Ridgway's *Birds of North and Middle America* (Washington, U. S. Nat. Mus. Bull. 50, 1914) Pt. VI., unless otherwise noted.

Order ANSERIFORMES

Family ANATIDAE

Branta canadensis (Linnaeus). Canada Goose

[1] 1510 Key Boulevard, Arlington, Virginia

Two specimens, now in the Academy of Natural Sciences of Philadelphia, listed by Hampe and Kolb (*Ibid.*) as *B. c. leucopareia* (Brandt), based on an identification by Mr. James Bond, have been reexamined by him and have been reallocated to *B. c. hutchinsii* (Richardson). (*In litt.* to Dr. Herbert Friedmann).

Specimen records: *Maryland*-Bishop's Head (1); Bohemia River (1).

Chen hyperborea (Pallas). Snow Goose

Hampe and Kolb (*Ibid.*) list a specimen found in the Washington Market as a representative of *C. h. atlantica* Kennard. Mr. Herbert Deignan now informs me that the "Washington" market referred to was located in New York City and not in the District of Columbia. There is, however, a more recent specimen in the U. S. National Museum, taken by J. H. Buckalew, which is a representative of this race.

Specimen record: *Maryland*-Assateague Island, Green Run (1)

Anas discors Linnaeus. Blue-winged Teal

A newly-described subspecies, *A. d. orphna* (Stewart and Aldrich, 1956, *Proc. Biol. Soc. Wash.* 69:29-36) has as its center of abundance "the brackish tidal marshes of New Jersey, Delaware and Maryland, particularly in the Chesapeake Bay marshes of Dorchester County, Maryland and in the Delaware Bay marshes of Delaware and New Jersey." The type locality is "Eliot" (*sic*), Dorchester County, Maryland.

Specimen records: *Maryland*-Blackwater Refuge (1); Elliot(4); Oxon Hill (1).

Order STRIGIFORMES

Family STRIGIDAE

Otus asio (Linnaeus). Screech Owl

Wing lengths of eight males and two females taken along the Baltimore-Washington Fall Line average 158 mm and 165 mm in length respectively, and although these measurements are below the average for the eastern race *O. a. naevius* (Gmelin), they are well within the mensural limits of that form. Three males from the Del-Mar-Va peninsula, however, average 154 mm. and indicate that the birds from this area are somewhat intermediate towards the southern form *asio* (Linnaeus). One female from the Del-Mar-Va peninsula with a wing measurement of 162 mm. also reflects this distributional pattern.

Specimens examined: *District of Columbia* - (7). *Maryland*-Bryan's Point (1); Laurel (1); Gardenville (NHSM) (1); Cambridge (1); Greensboro (1). *Delaware* - Ellendale (1); Delaware City (1).

Order PICIFORMES

Family PICIDAE

Colaptes auratus (Linnaeus). Yellow-shafted Flicker

I have been unable to correlate measurements of this species with any pattern of racial distribution in Maryland. From specimens examined, it would appear that a broad area of intergradation occurs between the southern form *auratus* (Linnaeus) and the northern form *luteus* Bangs across Delaware, New Jersey, Maryland, and at least one County in northeastern Virginia (Fairfax).

Two migrant birds taken at Hooper's Island, Oct. 5, 1950, are intermediate between *luteus* and the far-northern race *borealis* Ridgway.

Specimens examined: *New Jersey* - Cape May (1); Fort Lee (4). *Delaware* - Indian River (1). *Maryland* - Oxon Hill (1); Olney (1) Garrett County (1); Grantsville (1); Woodbine (NHSM) (1); Hooper's Island (2). *District of Columbia* (3). *Virginia* - Alexandria (*sic*) County (1).

Dryocopus pileatus (Linnaeus). Pileated Woodpecker

Formerly, judging from specimens taken in near-by West Virginia, it had been assumed that the local population of Pileated Woodpeckers in Garrett County would most likely prove to be the northern race *abeiticola* (Bangs). In an attempt to more clearly define the racial status of these woodpeckers in western Maryland, a pair of breeding birds were collected in the summer of 1950 by Robert E.Stewart and the writer. Subsequent identification of these specimens as *pileatus* indicates that the resident form in that area is the same as the subspecies occurring on the Coastal Plain.

Specimens examined: *Maryland* - Garrett Co., 3 mi. E. of Tablerock (2).

Centurus carolinus (Linnaeus). Red-bellied Woodpecker

As I have shown elsewhere (unpublished mss.) the resident population of Red-bellied Woodpeckers in Maryland should be referred to the eastern deciduous forest race *zebra* (Boddaert).

Specimens examined: *Maryland* - Doub (1); Laurel (3); Sandy Spring (1); Powellsville (1)

Sphyrapicus varius (Linnaeus). Yellow-bellied Sapsucker

A. F. Ganier (1954, *The Migrant*, 25:37-41) includes western Maryland in the area of intergradation between *varius* and his newly-described form *appalachiensis*.

Specimens examined: None.

Dendrocopos villosus (Linnaeus). Hairy Woodpecker

D. v. villosus is the breeding bird of the western counties of the State (Finzel, Bittinger). On the Eastern Shore, however, *audubonii* (Swainson) has been collected at Powellsville (April 30, wing 113.5, tail 68, culmen 25). It

would seem, judging from the small measurements of a female taken at Lakehurst, N. J. (wing 115, tail 70, culmen 25) that the influence of the southern form extends northward along the Coastal Plain at least as far as central New Jersey. Specimens from the Baltimore-Washington Fall Line are intermediate between *audubonii* and *villosus*.

Specimens examined: *Maryland*-Bittinger (1); Finzel (1); Powellsville (1); Jefferson (1); Laurel (1). *District of Columbia* (1). *New Jersey* - Lakehurst (1).

As a matter of record, it might be worth noting that the National Collection contains a number of specimens of *Limodromus griseus hendersoni* Rowan from New Jersey and Virginia. There are none from Maryland. It is not improbable, however, that further collecting will verify the occurrence of this race along the Maryland coast.

A TYPICAL MARYLAND HABITAT FOR THE SLIMY SALAMANDER

by E. Clyde Prince[1]

Cunningham Falls, at the beginning of the Catoctin Recreation Area, Frederick County, Maryland, is one of the best habitats for the slimy salamander, *Plethodon glutinosus glutinosus* Green, in Maryland. A heavily wooded area with a profusion of secondary undergrowth and fallen logs, it is situated within a region of gently sloping hills in the Western Division of the Maryland Piedmont.

Many decaying logs of mixed deciduous trees, settled in slightly acid soil, form suitable egg-laying sites for *glutinosus*. A high concentration of small ground insects and earthworms provides a plentiful food supply for both young and adults.

Warm weather in this area starts in late April and ends in late September, giving a favorable growing season. Forty-five specimens that were typical in markings and indicative of the general size to be found (80-150 mm. total length) were taken in three and one-half hours on September 22, 1956.

At the beginning of the Cunningham Falls - Catoctin area, the land is relatively low with a few marshy areas. Progressing west by northwest, the land rises gradually, and Hunting Creek, which forms Cunningham Falls, increases steadily in flow rate. The marshy areas diminish and are replaced by low hills, more heavily forested than the areas below. It is at this point that the greatest numbers of *glutinosus* are congregated. Farther up the creek the hills angle sharply upwards and the populations of *glutinosus* grow smaller in number. Along the low hills, in addition to fresh and rotting logs, innumberable shallowly-imbedded rocks offer ample hiding places and feeding sites.

Associated amphibians of the general area are *Plethodon cinereus cinereus, Eurycea bislineata bislineata, Eurycea longicauda longicauda, Desmognathus fuscus fuscus, Rana sylvatica sylvatica, Rana pipiens, Rana palustris, Rana clanitans melanota* and some *Bufo woodhousi fowleri*.

1 Department of Herpetology, NHSM.

THE WINDWARD ROAD. By Archie Carr. Alfred A. Knopf. $4.50
SNAKES AND SNAKE HUNTING. By Carl Kauffeld. Hanover House $3.95

Konrad Lorenz, perhaps the greatest of living "naturalists," wrote in his famous *King Solomon's Ring*, ". . . he who has once seen the intimate beauty of nature cannot tear himself away from it again. He must become either a poet or a naturalist and, if his eyes are good and his powers of observation sharp enough, he may well become both." Archie Carr, Professor of Biological Sciences at the University of Florida. demonstrates once again that he is both. Widely known for his *High Jungle and Low*, which first introduced his poetic style to the public, Dr. Carr's scientific abilities and gifted writing coalesce to perfection in his most recent chronicle of tropical adventure, *The Windward Road*.

The windward road, Dr. Carr tells us, is that"road" which leads to or runs along the upwind coasts, and it is the best road." . . on Grand Cayman - if it is July and the broad scrub inside the island claws down the breeze before it gets to Georgetown and looses the mosquitoes in the shade and leaves the open land in the hard grip of the sun, and it is no longer a pleasant place to be, there in the lee of the land - take the road to windward and see the change." Dr. Carr has taken many delightful roads to windward, and, with his vivid poetic prose, which is permeated with "Carrish" humor and occasional epicurean dalliances (remembrances of such sterling Caribbean fare as Cuban *langostino* and baked pectoral cut of big male *Chelonia*, a la San Andres), he retraces the most wonderful, taking us along on his return.

The book has, as its central characters, the huge Atlantic sea turtles: *Dermochelys*, the strange giant leatherback or trunkback; *Eretmochelys*, the hawksbill, whose once exalted but unenviable position in the tortoise-shell market has been fortunately usurped by the plastics industry; *Caretta*, the logger-head; *Chelonia*, the green turtle, gourmet's delight; and *Lepidochelys*, the Atlantic ridley, which has earned for itself the *nomen opprobrium* of bastard turtle because fishermen believe it to be a sterile hybrid produced when a green turtle and a loggerhead get their signals and their genes crossed, and because no one has as yet found gravid females, breeding beaches, or nests of the species. Dr. Carr studied these animals for years along the breeding beaches and in their home waters in the Caribbean area. From his first chapter, "The Riddle of the Ridley", to his last, "The Passing of the Fleet", he explores and explains the lives and loves, the mysteries and riddles, and the probable fate of these interesting beasts.

But, this is not just a book about turtles. Neither is it solely about the sloths and paradox frogs, the jaguar which Dr. Carr encounters along a lonely beach, the tepescuinte, and the wild dogs of Siquirres which dig up and eat the eggs of the giants which lay on the windward road; nor "jesucristo" the basilisk which "walks" on the water . . . . It is a book about values. Not values dissected and listed, values excised; but values presented inherently in the beauty of a language, a language exquisitely drawn from the beauty of experience lived, each

moment recorded with the sensitivity of a multi-tuned receptor, like this one:

"Then I shut off the light and stood there with my odd fulfillment, listening as the Pseudis chorus closed in around me. I stood like a shitepoke roost in the thin dark - a Full Professor in the prime of life - with my navel in the pond and five children back home going through their shoes: hearing the rare song and stowing it away, wondering why a frog with his females there floating beside him under the moon should sing on in the dark, through the ages."

The off-beat tropics exert a highly-potent fascination for the naturalist, for among other things, "No one is so innately opposed to the more overt signs of human progress as a naturalist. . ."This fatal lure has to do, to a great degree, with the presence of a pervading primal novelty. None of the sophisticated world intrudes, no metropolis and no thundering motor herds; away from efficiency experts and progress, out of wraps and out of touch with blatant noise and rush and hurry, life is lived at its own pace. Dr. Carr points up this particular kind of solitude half-humorously:

"I was the only white man in the village, or for maybe ten miles in any direction, and this was satisfying. Not that I have anything against white men as such - some of my best friends are white."

To those who know the feeling of the tropics, this obsession with the sun and the sea and the jungle green - those who know the quiet beauty and meaning of the forest sound at night or a sea-scene along a surf-lapped beach framed by *Coccoloba*, the sea-grape jungle- *The Windward Road* will have particular significance.

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In most cases, so popular legend has it, judging a book by its cover is an unsafe and misleading practise. However, the contrast between the imaginative and artistic cover which Edward Sorel created for *The Windward Road*, and the precisely accurate dust-jacket with photograph with graces Carl Kauffeld's *Snakes and Snake Hunting* reflects the basic differences between the two works.

It is not fair to draw a comparison between these books, since most naturalist-writers would suffer by comparison with Dr. Carr. Nevertheless, while lacking the creative writing skill which is found in *The Windward Road* (he relies for his poetry on quotations from Bret Harte, Elizabeth Coates, and John Treadwell Nichols), Mr. Kauffeld recounts some interesting adventures. What he presents to us, essentially, is an embellished copy of his United States field journals.

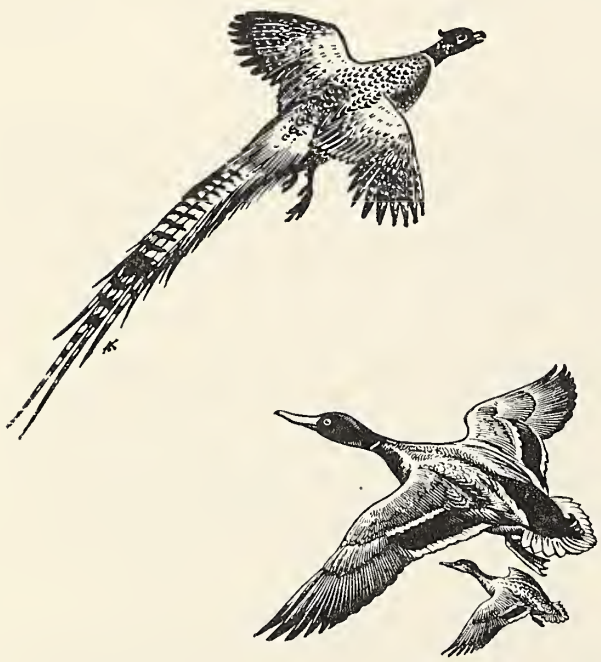
The layman is very often of the opinion that snakes simply abound in suitable areas. Mr. Kauffeld more than adequately shows that snakes are only to be found as the result of long hours of labor and physical output,

days of wearying search. And, on top of this, he makes it easy to understand why anyone would expend this effort just to find creatures which are generally considered to be something less than desirable. This is no simple task. The ichthyologist, the entomologist, and the mammalogist all have their economic out; the ornithologist and conchologist their aesthetic. But, the snake man invariably finds the question "Why do you collect snakes?" a difficult one to answer. Mr. Kauffeld has done it, and aesthetics is the greater part of his indictment.

While Dr. Carr's central figures were *Chelonia* and its relatives, Mr. Kauffeld's *dramatis personae* are inherently more awe-inspiring subjects - *Crotalus*, the rattlesnakes. Those persons who are more interested in other forms may find his preoccupation with rattlers a little disconcerting. But, as Mr. Kauffeld points out, rattlesnakes hold the same fascination for him that birds of prey hold for ornithological enthusiasts and big cats for mammal men. They are dramatic figures. There is considerable discussion, too, of king snakes, water snakes, garter snakes, moccasins, racers, and coachwhips.

Mr. Kauffeld, who is Curator of Reptiles at the Staten Island Zoo and has been for the last ten years, brings to his writing a zealous love of wildlife and a strong enthusiasm for nature in general, and reptiles in particular, that is refreshing. For those of us who have collected in some of the same areas about which he writes, the book is a series of vivid memories. For others, it will be a well-done introduction to snakes and snake hunting.

John E. Cooper



NUMBER 14

MARYLAND NATURE LEAFLET

MARYLAND: LAND, PEOPLE AND IDEAS

by
Edward L. Biller, Jr. [1]

Illustrations by Brian W. McMullin

Fourteen men sat in a small barge as it glided silently near the shore. Several of the men manned the oars. Others watched the forest-covered shoreline with anxiety. The barge stopped frequently to allow a bearded man in the stern to examine the shore and make notes in a small book. The men were tense and alert. They had been surprised by Indians before. They were not going to be surprised again if they could help it.

Captain Smith smiled as he studied the shoreline. He was imagining this rich land filled with people from his homeland. He even thought that someday a great city might stand on the river bank.

In 1608, Captain John Smith explored the shoreline of the Chesapeake Bay. The map he produced was without equal for many years. The names he applied to many land and water features of Maryland are still in use today. More important, however, was his vision of new people and ideas coming to the land which he explored. In his words, "Heaven and earth never agreed better to frame a place for man's habitation".

European pioneers settled along the James River in Virginia in 1607. Before many years passed, more pioneers equipped with European ideas came to the New World and settled near Plymouth, Massachusetts. In 1632, two small sailing vessels, The Ark and The Dove, brought the first European settlers to Maryland. A new era dawned!

Early Inhabitants. The Maryland area had been inhabited and used by Indians for hundreds of years....perhaps even as long ago as the Ice Age. The Indians used the land in the best way they knew. They thrived on foods they found easy to gather: foods like oysters, crabs, fish, game, berries, and wild plants. These Indians were also farmers. They made clearings in the forest with their crude stone tools. They planted crops in these fields. When the land was exhausted after a few years, the entire village moved to a new location.

The Land. The land has changed little since the days of the Indians.

[1]Supervisor of Geography, Baltimore City Secondary Schools.

MARYLAND PIEDMONT SCENE

Maryland has a wide variety of features: the level lands of the Coastal Plain, the rolling surface of the Piedmont Plateau, and the ridges, valleys, and plateau of the Appalachian region.

The large tract of level land and along the Atlantic Ocean is called the Coastal Plain. This land was once the bottom of the ocean. It is composed of layers of sand, clay, and gravel sometimes hundreds of feet thick. The Chesapeake Bay divides the Coastal Plain into two sections, the Eastern Shore and the Western Shore.

To the west of the Coastal Plain is a higher, hilly area called the Piedmont Plateau. This pleateau is the remains of an ancient mountain system. Hard rock is found beneath the soil. Streams flowing from the hard surface of the Piedmont to the loose sands of the Coastal Plain make waterfalls or rapids. The line of waterfalls along the meeting place of the Piedmont and the Coastal Plain is called the Fall Line.

Many towns and cities were built on or near the Fall Line. Early ocean-going vessels were unable to sail beyond the waterfalls. Colonial industry took advantage of the available water power. Products of the Coastal Plain were easily exchanged for products of the Piedmont.

West of the Piedmont Plateau is the Appalachian region. This is a region of mountains and valleys. In the extreme western part of Maryland, the mountains change to high, rugged plateau land.

The Climate. Climate also plays an important part in the natural environment of Maryland. The plants, animal life, and type of soil are largely regulated by climate. Our climate has four distinct seasons: spring, summer, fall and winter. The most outstanding feature of the climate, however, is it changeability. The weather is frequently different from day to day.

The changing weather is caused by huge masses of air. These air masses move across the United States from west to east. During the winter, masses of air

from far northern Canada or the northern Pacific Ocean bring cold weather and sometimes snow. Air masses from the South sometimes creep in. Marylanders then enjoy a winter "warm spell".

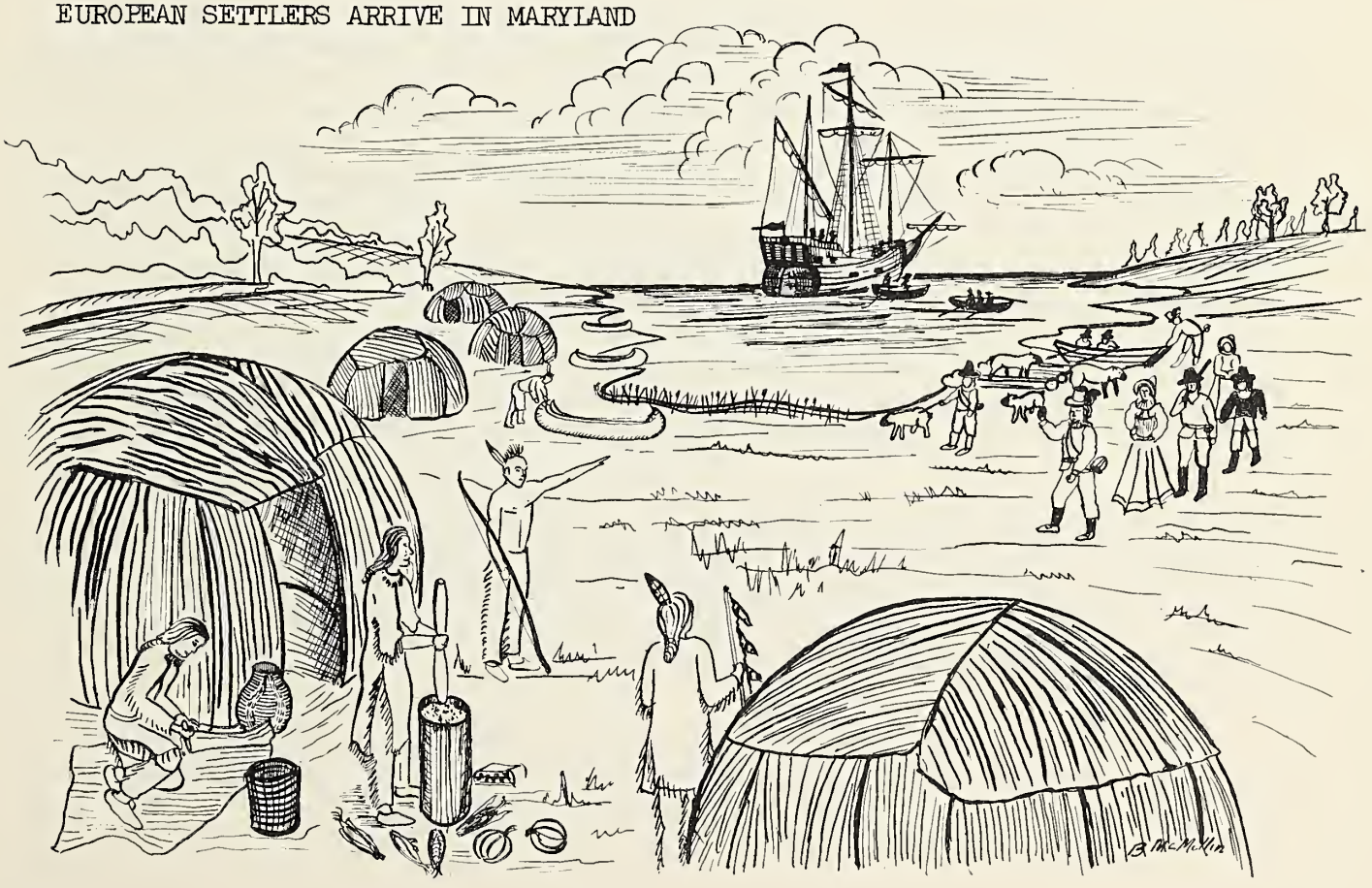
Air masses from the South also make our summers hot and humid. Everyone seeks relief from the heat. The arrival of a cool air mass from the north is always welcome. Many times thunderstorms bring relief from the heat in the late afternoon or evening. There is some rain during each month of the year, but more rain falls during the summer months when the crops are growing.

Colonial Ideas. Maryland's climate, minerals, landforms, vegetation, waterforms, wildlife, and soil make up the natural environment. The Indians used the natural environment to the best of their knowledge and established a way of life which we call "Indian Culture". An entire set of ideas of any group of people is called their culture. With the arrival of the European settlers. a different set of ideas was brought to the Maryland environment. A new culture was established.

When the settlers arrived in this new land, one of their first problems was getting food. Many became farmers. Some of the early attempts at farming were failures. The settlers found that many of their ideas about land use and getting food were not successful. The soil, climate, and growing conditions were different from those in their homeland in western Europe.

The settlers saw how successful the Indians were in gathering food and growing crops. They began to borrow ideas from the Indians. Europeans began to plant corn, peanuts, sweet potatoes, squash, lima beans, potatoes, tomatoes, and pumpkins. All of these are still popular foods today.

EUROPEAN SETTLERS ARRIVE IN MARYLAND



Frequently two different cultures living side by side exchange ideas. The early colonists added many Indian ideas to their own.

New Ideas. Just as the colonists borrowed ideas from the Indians, new ideas continued to come from Europe. Ideas change and develop quickly. In the late 1700's, life in western Europe began to change. Man learned how to use the energy of the earth to do work. He learned to use coal to produce steam, which was used to run machines. Machine power began to replace muscle power.

These ideas developed like a rolling snow ball getting larger and larger and going faster and faster. There were many new ideas about government, health, medicine, education, science, and public welfare. This rapid development of new ideas is called the Scientific or Industrial Revolution. It is still in progress today.

Ideas of the Scientific Revolution soon found their way to America. Settlers from western Europe flocked to the United States in the 1800's, and ideas as well as products were exchanged in trade. Ideas were improved. New ideas were added. How did these new ideas affect Marylnad?

Coastal Plain. Maryland today is much different from what it was in colonial times. Methods of agriculture, for example, have improved. Fewer people are engaged in farming, but agriculture is still an important activity.

On the Coastal Plain the soil is not fertile, but the land is level and easy to work. Farms are usually small. This section is near the thickly populated part of the United States. Many cities with large populations are only a short distance away. City dwellers need food.

Growing fruits and vegetables to sell is the most prosperous type of farming on the Coastal Plain. This type of farming is called "truck farming" because most of the crops are hauled to city markets in trucks. Although truck farming requires little land, a great deal of cultivation, fertilizer, and care is needed to produce the finest vegetables and fruits.

Farmers can also raise poultry on small farms, and poultry farming is another leading activity on the Coastal Plain. Live baby chicks, "fryers", eggs, turkeys, and many poultry products are shipped all over the United States.

There are also other types of farming on the Coastal Plain. The northern part of the Eastern Shore is higher than the southern section. The soil is more fertile. Many farmers raise dairy cattle and grow hay and other crops necessary to feed dairy herds. Milk is sent to cities in Delaware, New Jersey, and eastern Pennsylvania. Since the completion of the Bay Bridge, there is a freer exchange of products between the Eastern and Western Shores of Maryland.

On the better drained section of the Coastal Plain south of Baltimore City, many farmers grow tobacco, most of which is sold to cigarette manufacturers.

Many of the people who live near the Chesapeake Bay or the Atlantic Ocean secure their living from these waters. Commercial fishermen, crabbers, and oystermen send their catches all over the eastern half of our country.

Piedmont Section. Different ideas about farming have been used on the Piedmont Plateau. The fertile soil, rolling landscape, and industrious farmers help make this the richest agricultural section of the state. Farms are much larger than those found on the Coastal Plain. Corn, hay, and wheat as well as other grains grow well on the Piedmont.

Piedmont farmers have found that it often pays to feed their crops to herds of dairy cattle. The milk is then sold to dairies in Washington, D. C. and Baltimore City. In recent years, beef cattle from the West and other livestock are fattened on Maryland farms before they are sold to meat packing plants. Piedmont farmers usually specialize in dairy, livestock, or general farming.

Appalachian Region. In the Appalachian region of Maryland, the surface of the land is so rugged that only trees grow well. Some of these trees are cut for lumber and other uses. The bark of certain trees is used in tanning leather. In the extreme western part of our state, sugar maple trees yield a large supply of maple syrup.

Some general farming takes place in the valleys and plateaus where the land is fairly level. In many of the valleys fruit trees are grown. Apples and peaches are sold at roadside stands or shipped to large cities.

Baltimore has many advantages for manufacturing. Manufacturing and commerce had an early start. The water of Jones Falls has been used to furnish power for several hundred years. Even before the founding of Baltimore, Jonathan Hanson used the water falls to turn a flour mill. Many of the main overland transportation routes passed through Baltimore in colonial days. The harbor, with its protected location and water route extending far into the interior of the United States, attracted ocean shipping. Manufacturing, trade, transportation, and population grew together.

Today manufacturers still find the Baltimore area an ideal location. Many skilled workers are available. The harbor, with its two outlets to Atlantic Ocean as well as the availability of rapid overland and air transportation, makes it easy for manufacturers to assemble necessary raw materials. Power is available locally in the form of electricity or natural gas. Coal and oil can be easily secured from nearby regions.

The products from Baltimore are many and varied. Manufactured or processed items range from licorice sticks, sugar cubes, umbrellas, and men's hats, to automobiles, airplanes, hugh electrical equipment, and ocean vessels.

The variety of manufactured products leads to a well-balanced economy. In the Baltimore area, the leading types of manufacturing include food processing and canning, metal and petroleum refining, shipbuilding, and the making of clothing, metal products, machinery, fertilizers, and chemicals.

Baltimore owes most of its growth to an ideal location. It is the focal point for much of the overseas trade for Maryland and the interior of the United States. It has always been cheaper to haul goods by water than by land. Baltimore, the most western of the eastern ports, handles a great deal of the trade bound to and from the "Bread-basket of the United States". In 1956 over 5,700 vessels loaded and unloaded in the Baltimore harbor. They bring in such things as iron and other metal ores, petroleum, potash, sugar, bananas, rubber, coffee, lumber, cork, newsprint paper, and fibers. Outbound ships take corn, wheat, metal products, coal, fertilizer, chemicals, automobiles, machinery, brick, copper, cement, and hundreds of other products to all parts of the world.

The more than a million people in the Baltimore area do not all work in transportation, ocean trade, or manufacturing. It takes many people to make a city function. Like all communities, Baltimore needs doctors, bankers, engineers, street cleaners, policemen, businessmen, ministers, firemen, clerks, politicians, and many others. Baltimore City is the cultural, business, and industrial hub of Maryland.

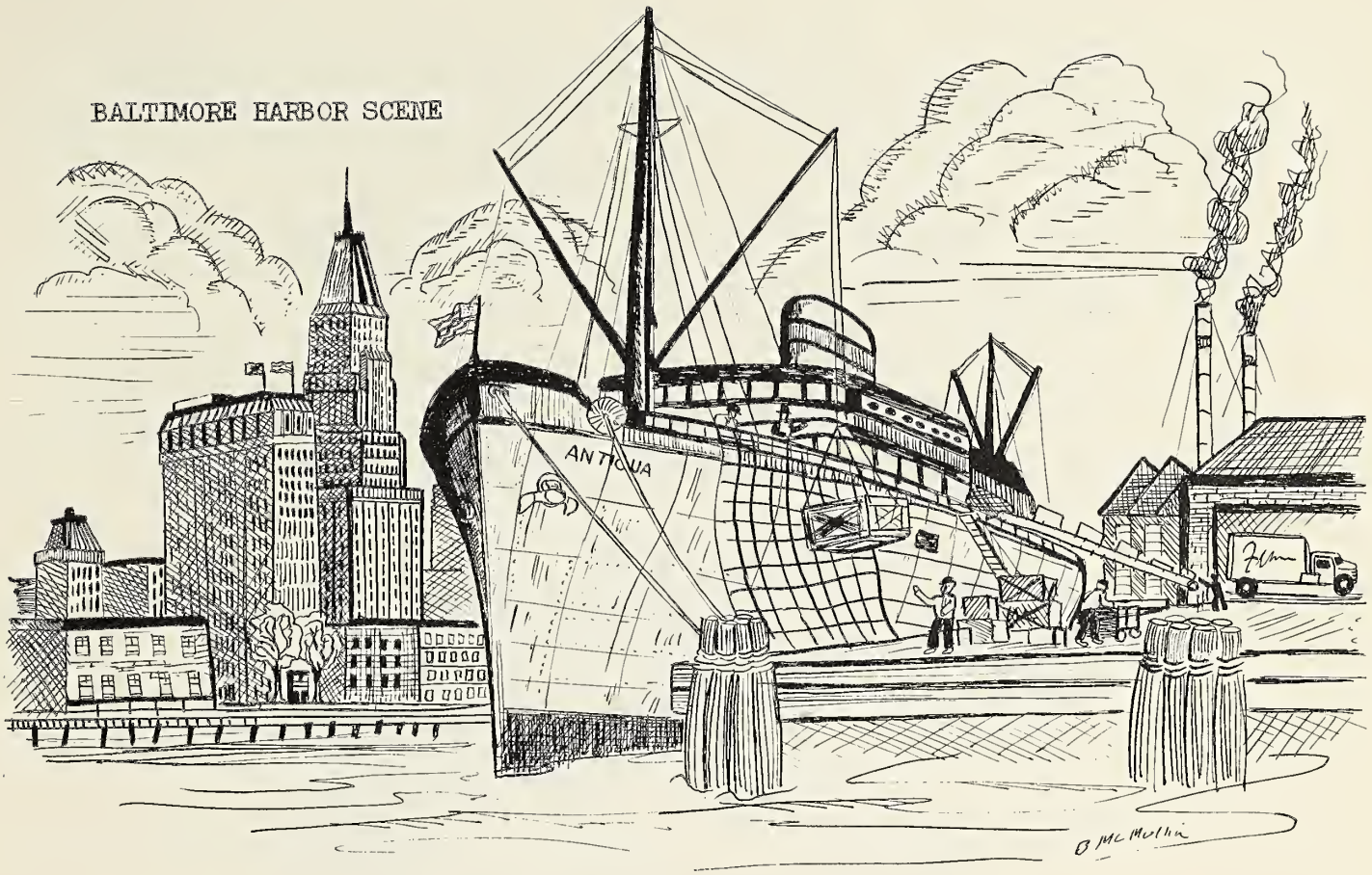
Other Cities. Baltimore's sister city, Washington, D. C., is just forty miles away. Over two-thirds of the population of Maryland live in the Baltimore area and the Washington suburbs. Washington is not a political part of Maryland, but its expanding suburbs extend into Montgomery and Prince George Counties. Washington functions as the cultural and industrial center for the surrounding countryside. Many Marylanders work in various branches of the national government, which is centered in Washington.

Just as Baltimore and Washington are cultural and business centers for large areas, Salisbury, Chestertown, Cambridge, Easton, and Annapolis, the state capitol, are smaller centers on the Coastal Plain. In these cities, most of the industries are directly related to the main occupations of the people. Industries like food packing and canning, the sale and manufacture of agricultural equipment, poultry feed, fertilizer, and fishing supplies, boat building and repair are very important.

Westminster and Frederick serve the Piedmont Plateau area. These cities carry on small amounts of manufacturing, most of which is related to the agricultural countryside.

In the Appalachian region, two cities are outstanding. Hagerstown is located in a broad, fertile valley. In addition to the manufacture of products relating to agriculture, there is a large aircraft plant, furniture factories, and one of the few manufacturers of pipe organs. Hagerstown is a transportation center. East-west highways and railroads cross transportation lines which run north and south.

Cumberland, the second largest city in Maryland, is also a transportation center.



BALTIMORE HARBOR SCENE

The Potomac River and Wills Creek have cut passageways called "gaps" through the mountains. Railroads, telegraph lines, power lines, telephone lines, and highways follow these gaps. At one point called the "Narrows" five lines of railroad track, three separate sets of power and telephone lines, a highway, and Wills Creek squeeze through the narrow opening. Because of the available transportation and the nearness to timber and coal supplies, there are a number of manufacturing plants located in Cumberland where products such as new "miracle" fabrics, tires, paper, and paper products are made.

Minerals. Earth materials are of little value unless man knows how to use them. We have learned to use many minerals in manufacturing, and Maryland is fortunate in having a variety available for use. The Coastal Plain yields sand, clay, and gravel. Clay is used to make bricks, terra cotta pipe, and electrical insulators. Sand and gravel have many uses as construction materials.

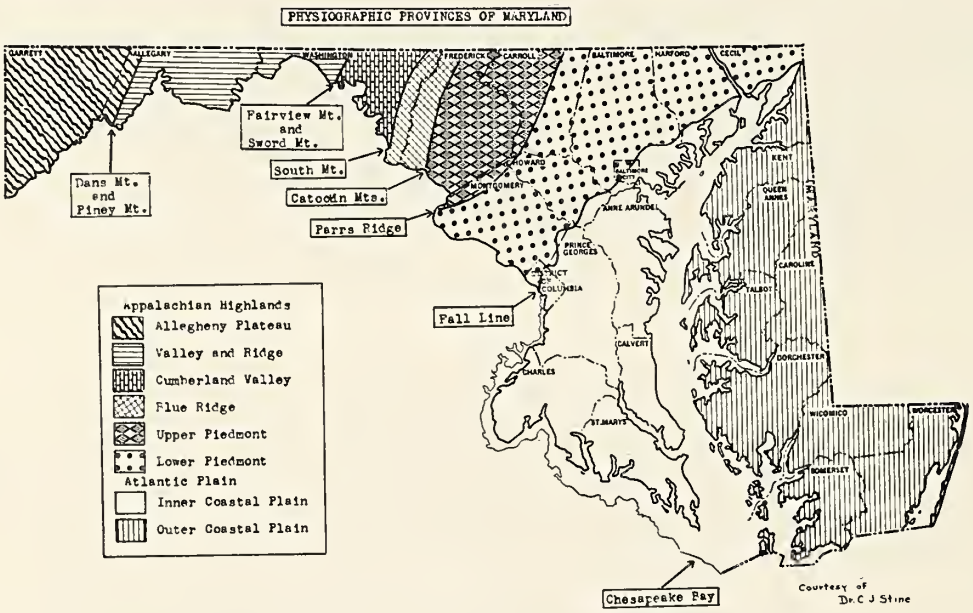
On the Piedmont, building stone, slate, and limestone are quarried. Limestone is in demand by steel manufacturers, cement plants, and fertilizer factories.

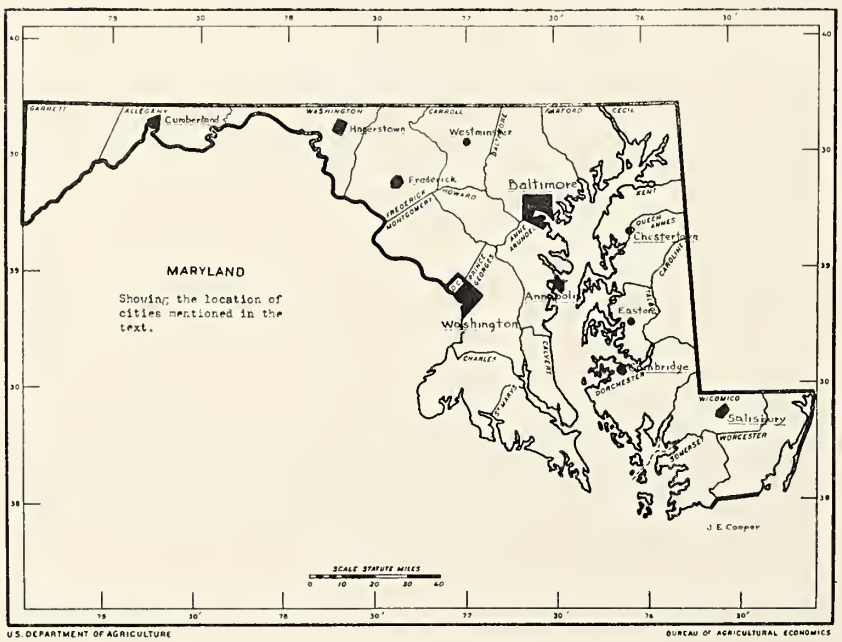
The appalachian region contains deposits of soft coal. Some deposits are near the surface and can be easily mined by steam-shovels and bulldozers. Other deposits are deep in the earth and must be mined by shaft and tunnel methods. Deposits of special sands and clays are also found and are used in the manufacture of china and glassware.

Interdependence. Maryland is one of the smallest of the forty-eight states. There are little more than 2,300,000 people living in Maryland. The variety of products and skills, however, which we contribute to the total production of the United States is great. Many people in other parts of the world depend upon products which are exported from Baltimore.

Marylanders depend on other people too. We have borrowed numberous ideas and skills from various peoples of the world, and we depend daily on raw materials and products from many parts of the earth.

A study of the geography of Maryland is never finished. The geography of Maryland constantly changes. The Maryland of today may not be the Maryland of tomorrow just as the Maryland of the Indians was not like colonial Maryland. When ideas change rapidly, there is also a change in the close relationships between people and the space in which they live.





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